

# Colorado Basin Outlook Report MAY 1, 2002



# Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

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## *How forecasts are made*

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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# **COLORADO WATER SUPPLY OUTLOOK REPORT MAY 1, 2002**

## **Summary**

As the disappointing winter of 2002 draws to a close, the state's water managers are bracing for one of their lowest runoff prospects in recent memory. April snowfall and precipitation was extremely low across the state. This, coupled with warm spring-like temperatures, sent the state's snowpack percentages into an early downward spiral. Another dry month across the state also triggers decreases in forecasted streamflow runoff in all basins. In a number of watersheds across southern Colorado, peak flows have already occurred, making this year unprecedented in the low and early runoff. Dry soil moisture conditions have stolen a significant amount of snowmelt from the state's streams. Low reservoir storage only adds to water supply concerns. Most water managers can't remember a year as bad as this.

## **Snowpack**

Snowfall across Colorado during April was well below average, adding to the string of dry winter months. As a result, the state's snowpack percentages steadily declined throughout the month leaving the state with only 19% of its average snowpack on May 1. The current snowpack is only 24% of last year's at this time. The current statewide snowpack is now at a record low for May 1, dipping below the previous record low percentage measured on May 1, 1981, which was only 21% of average. The lowest percentages continue to be measured across southern Colorado, with the Rio Grande and combined San Juan, Animas, Dolores, and San Miguel basins both reporting only 6% of average. The North Platte Basin, still at a dismal 44% of average, is the highest basinwide snowpack in the state. With the shallow snowpack accumulations, along with the early spring-like temperatures, many sites had either completely or extensively melted by May 1. As a rule, most sites below 10,000 feet elevation have already melted out. Above that elevation, only the sites that typically accumulate the deepest snowpacks have any snow remaining. Meltout at most sites across the state is progressing at 6 to 8 weeks earlier than normal % of average readings. This year marks the fifth consecutive year with a below average statewide April 1 snowpack. Last year's statewide snowpack on this date was 87% of average. All basins are reporting percentages well below those of last year, and range from only 36% of last year in the Rio Grande Basin, to a high of 84% of last year in the Yampa and White basins. During late March, warm temperatures induced snowmelt at a number of SNOTEL sites. Across southern Colorado, a few lower elevation sites have already melted out, with melt even occurring at the higher elevation sites. At these melt rates, many sites will be completely melted out about a month earlier than normal.

## **Precipitation**

April was the eighth consecutive month with below average precipitation measured at SNOTEL sites across Colorado. During the last 12 month period, only August reported an above average monthly total for the state. During that same 12 month period, statewide precipitation was less than 65% of average during eight months. For April, statewide precipitation was only 39% of average. While the Yampa White and Gunnison basins report nearly 50% of average for the month, most of the remainder of the state received less than one-third their monthly average. Statewide totals for the water year, which began on October 1, 2001, are only 66% of average. The lowest water year percentages continue to be measured in the Rio Grande and combined San Juan, Animas, Dolores, and San Miguel basins, at only 46% and 47% of average, respectively.

## Reservoir Storage

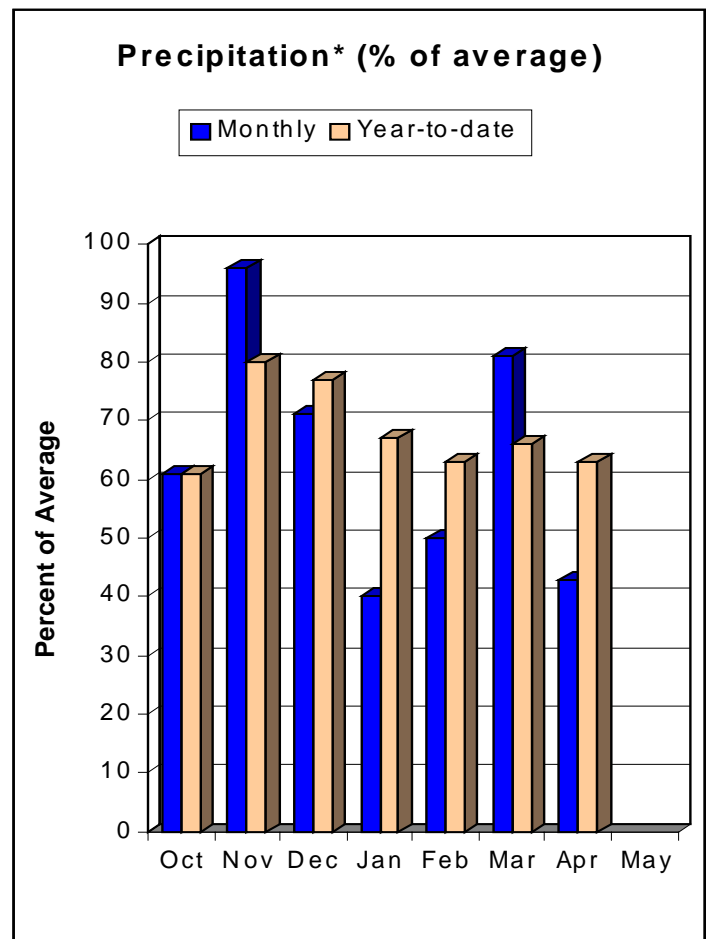
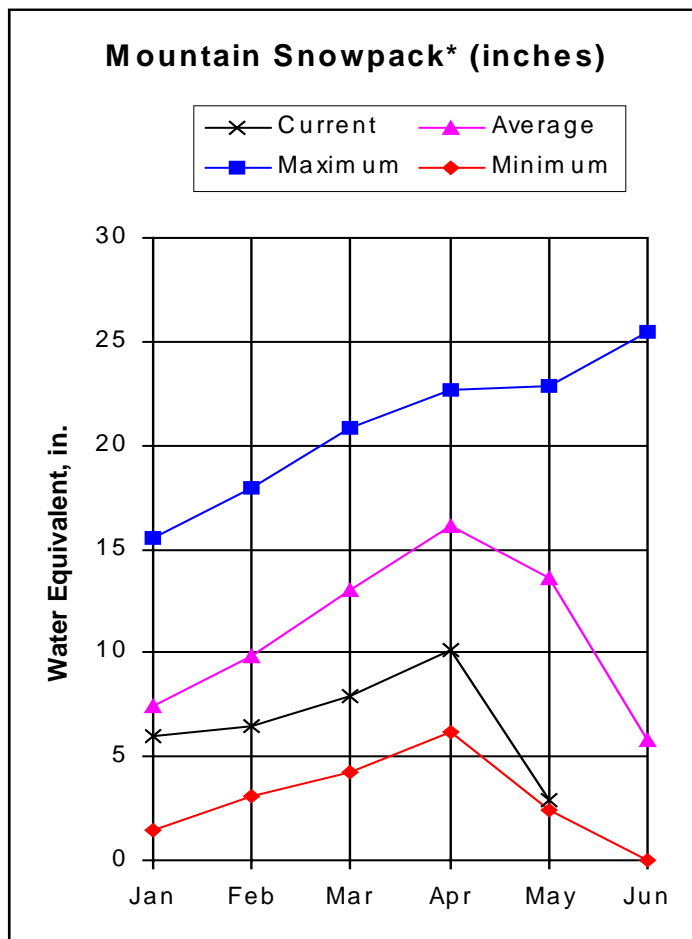
Reservoir storage continues to lag below average across most of the state. Statewide volumes are 86% of average and are 88% of last year at this time. Only the Gunnison Basin is reporting an above average storage volume, at 117% of average. The lowest storage volumes, as a percent of average, are reported in some of those basins, which are also plagued with the lowest snowpack and runoff prospects. Those basins include the Arkansas Basin with storage volumes of 76% of average, the San Juan, Animas, Dolores, and San Miguel with 72% of average volumes and the Rio Grande Basin at 71% of average storage. Statewide volumes are more than 470,000 acre-feet below the average mark for this date. With the water user demands ahead, along with low inflows, reservoir storage is expected to be severely reduced through the coming summer months.

## Streamflow

Runoff prospects are at an all-time low across most of southern Colorado. With the meager snowpack already melted and peak flows already past, many water users can only hope for an abundant monsoon season to reduce demands. April's dry conditions resulted in significant reductions in runoff forecasts in all basins. Decreases in forecasts from last months were common across the state. Most of those decreases range from 5% to 20% of average. The highest forecasts in the state, which only hover around half of average volumes, are in the Colorado River headwaters. The majority of the state's streams and rivers are expected to produce only 30% to 40% of average volumes. The lowest runoff volumes remain across southern Colorado, where streamflows of 15% to 30% are forecast. Without above average summer precipitation, late season streamflows may be extremely low in any basin.

# GUNNISON RIVER BASIN

## as of May 1, 2002



\*Based on selected stations

Continuing warm temperatures and lack of snowfall during April have driven the snowpack accumulation down to one of the lowest levels on record in the Gunnison Basin. Most of the measuring locations have melted out by May 1, leaving only 6 out of 15 locations with measurable snow. May 1 measurements are only 18% of average, which is the lowest since 1977, when it was only 16% of average. Measurements range from only 9% of average in the Uncompahgre Watershed, to 21% of average in the Surface Creek and Upper Gunnison watersheds. The monthly precipitation was only 43% of average during April, and there has been only 63% of the average precipitation so far this water year. Reservoirs are remaining in good shape so far, with 117% of average storage, as reservoir managers make use of what little runoff there has been, and prepare for the upcoming water use season. Since much of the snow has already melted many of the streams in the basin have already seen their runoff peaks, and streamflow forecasts for flows through July are extremely low. Forecasts range from only 15% of

GUNNISON RIVER BASIN  
Streamflow Forecasts - May 1, 2002

		<<===== Drier ===== Future Conditions ===== Wetter =====>>							
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)		
Taylor River blw Taylor Park Resv	APR-JUL	32	38	42	41	52	66	103	
Slate River nr Crested Butte	APR-JUL	45	48	50	56	53	58	89	
East River at Almont	APR-JUL	57	65	70	37	84	105	192	
Gunnison River nr Gunnison	APR-JUL	90	103	112	29	144	191	390	
Tomichi Creek at Sargents	APR-JUL	3.3	4.1	4.7	15	8.4	13.7	32	
Cochetopa Creek blw Rock Creek	APR-JUL	1.9	2.4	2.8	16	5.1	8.5	17.3	
Tomichi Creek at Gunnison	APR-JUL	4.0	9.0	13.6	17	19.1	29	81	
Lake Fork at Gateview	APR-JUL	27	29	30	24	38	50	126	
Blue Mesa Reservoir Inflow	APR-JUL	161	187	204	28	270	368	720	
Paonia Reservoir Inflow	MAR-JUN	15.0	19.0	23	22	27	33	105	
	APR-JUL	10.0	15.0	19.0	18	24	32	106	
N.F. Gunnison River nr Somerset	APR-JUL	65	84	98	32	114	138	305	
Surface Creek nr Cedaredge	APR-JUL	4.5	5.4	6.0	35	6.7	8.0	17.1	
Ridgway Reservoir Inflow	APR-JUL	33	37	41	40	45	52	102	
Uncompahgre River at Colona	APR-JUL	30	41	49	35	58	72	139	
Gunnison River nr Grand Junction	APR-JUL	284	323	350	22	490	696	1560	

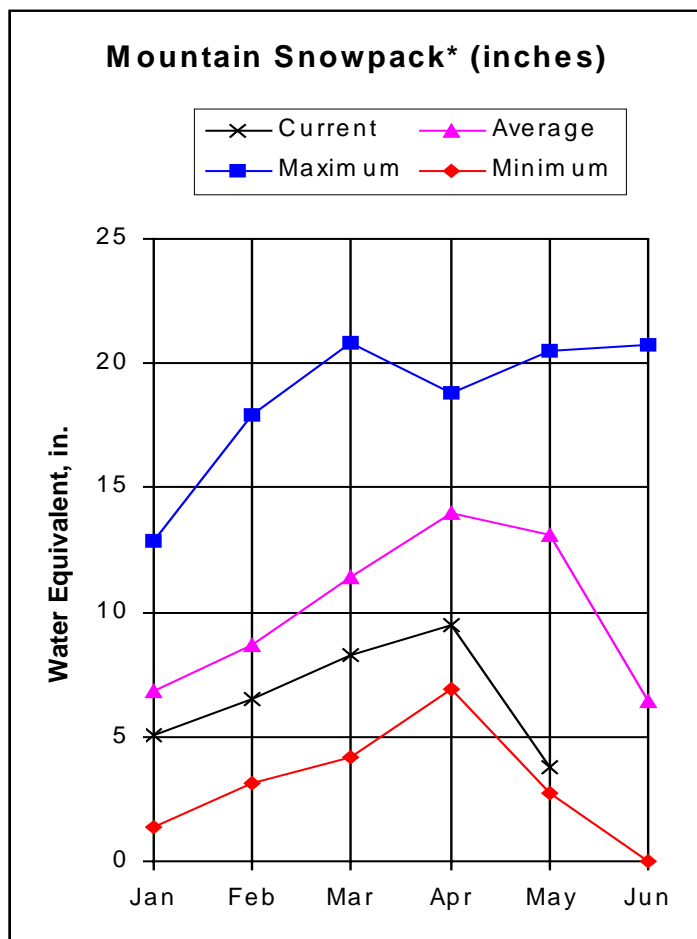
GUNNISON RIVER BASIN Reservoir Storage (1000 AF) - End of April					GUNNISON RIVER BASIN Watershed Snowpack Analysis - May 1, 2002			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of =====	
		This Year	Last Year	Avg			Last Yr	Average
BLUE MESA	830.0	503.4	458.4	404.7	UPPER GUNNISON BASIN	11	31	21
CRAWFORD	14.3	7.0	7.4	12.1	SURFACE CREEK BASIN	2	31	21
FRUITGROWERS	4.3	2.8	4.1	4.1	UNCOMPAHGRE BASIN	4	13	9
FRUITLAND	9.2	4.1	2.7	4.9	TOTAL GUNNISON RIVER BASI	15	27	18
MORROW POINT	121.0	110.4	108.1	113.4				
PAONIA	18.0	12.4	8.1	7.4				
RIDGWAY	83.2	70.8	67.8	57.9				
TAYLOR PARK	106.0	66.6	64.6	59.9				

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

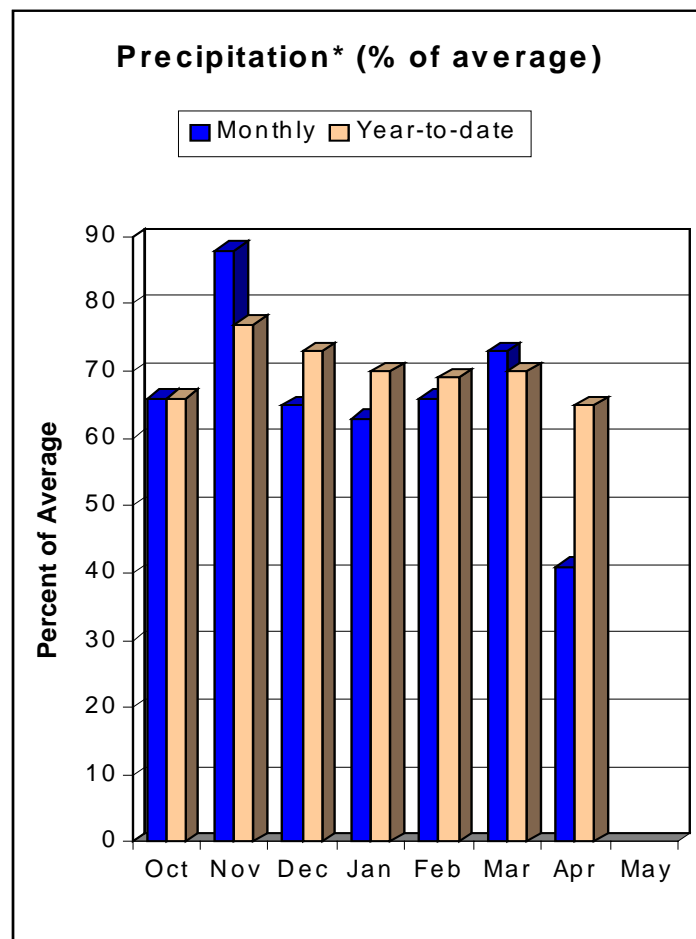
The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
(2) - The value is natural volume - actual volume may be affected by upstream water management.

## UPPER COLORADO RIVER BASIN as of May 1, 2002



\*Based on selected stations



The snowpack in the Colorado Basin has diminished to one of the lowest measurements on record, at only 27% of average on May 1. Over a third of the measuring sites have already melted out during April. Most of what snow remains is above 10,000 feet elevation, and even the snow in those locations is melting rapidly. Measurements range from only 4% of average in the Muddy Creek Watershed, to 34% of average in the Willow Creek Watershed. Precipitation in the mountains during April was only 41% of average, which was the lowest monthly accumulation this water year. The water year total is now only 65% of average. The combined reservoir storage is only 82% of average on May 1, which is likely to diminish further as the runoff season progresses. There is only 83% of the amount of storage there was last year at this time. While the streamflow forecasts are not exactly encouraging in this basin, they are about as good as it gets in the state. All the forecasts are much below average, and range from only 40% of average on the Colorado River near Cameo, to 58% of average at the Inflow to Williams Fork Reservoir.

UPPER COLORADO RIVER BASIN  
Streamflow Forecasts - May 1, 2002

		<----- Drier ----- Future Conditions ----- Wetter ----->						
Forecast Point	Forecast Period	Chance Of Exceeding *		Chance Of Exceeding *		Chance Of Exceeding *		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Lake Granby Inflow	APR-JUL	107	117	125	56	133	146	225
Willow Creek Reservoir Inflow	APR-JUL	12.6	17.9	22	43	27	34	51
Williams Fork Reservoir inflow	APR-JUL	42	49	55	58	61	70	95
Dillon Reservoir Inflow	APR-JUL	63	70	75	45	87	103	167
Green Mountain Reservoir inflow	APR-JUL	116	133	145	52	158	178	280
Muddy Creek blw Wolford Mtn. Resv.	APR-JUL	21	24	26	43	28	32	60
Eagle River blw Gypsum	APR-JUL	118	133	145	43	158	178	335
Colorado River nr Dotsero	APR-JUL	511	609	675	47	805	996	1440
Ruedi Reservoir Inflow	APR-JUL	50	60	68	48	77	93	141
Roaring Fork at Glenwood Springs	APR-JUL	197	247	285	40	325	389	710
Colorado River nr Cameo	APR-JUL	739	877	970	40	1187	1507	2420

UPPER COLORADO RIVER BASIN  
Reservoir Storage (1000 AF) - End of April

UPPER COLORADO RIVER BASIN  
Watershed Snowpack Analysis - May 1, 2002

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
DILLON	250.8	188.8	198.5	212.8	BLUE RIVER BASIN	8	38	30
LAKE GRANBY	465.6	159.5	273.0	259.5	UPPER COLORADO RIVER BASIN	29	37	29
GREEN MOUNTAIN	139.0	60.8	43.7	54.3	MUDDY CREEK BASIN	3	7	4
HOMESTAKE	43.0	13.0	19.1	16.8	PLATEAU CREEK BASIN	2	31	21
RUEDI	102.0	66.7	67.9	59.7	ROARING FORK BASIN	7	41	24
VEGA	32.0	16.0	13.9	16.6	WILLIAMS FORK BASIN	4	29	27
WILLIAMS FORK	96.8	50.2	52.6	55.3	WILLOW CREEK BASIN	3	50	34
WILLOW CREEK	9.0	6.7	6.0	5.9	TOTAL COLORADO RIVER BASIN	38	37	27

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

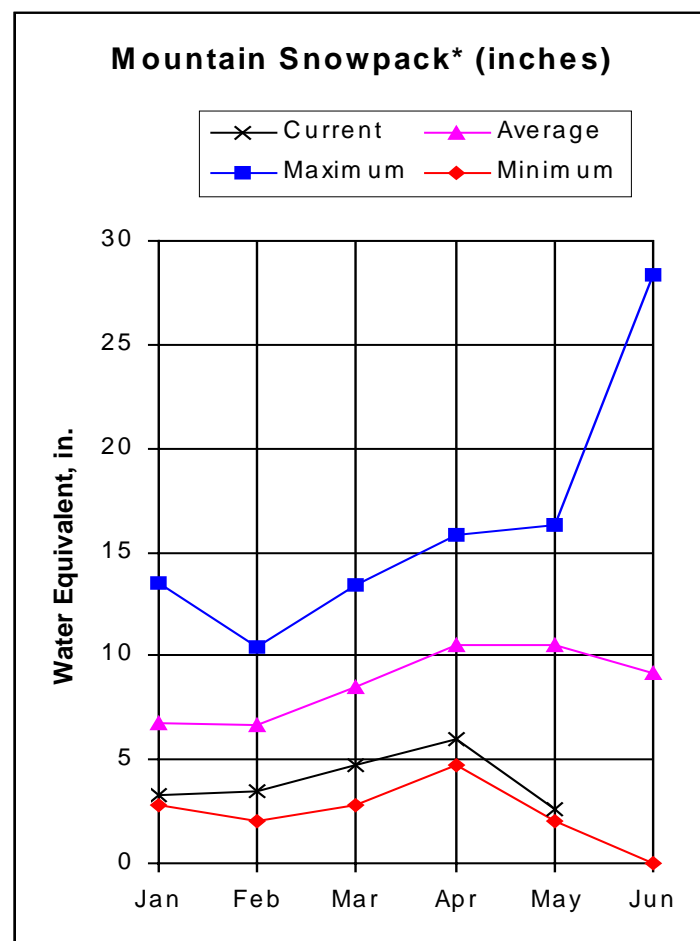
The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
(2) - The value is natural volume - actual volume may be affected by upstream water management.

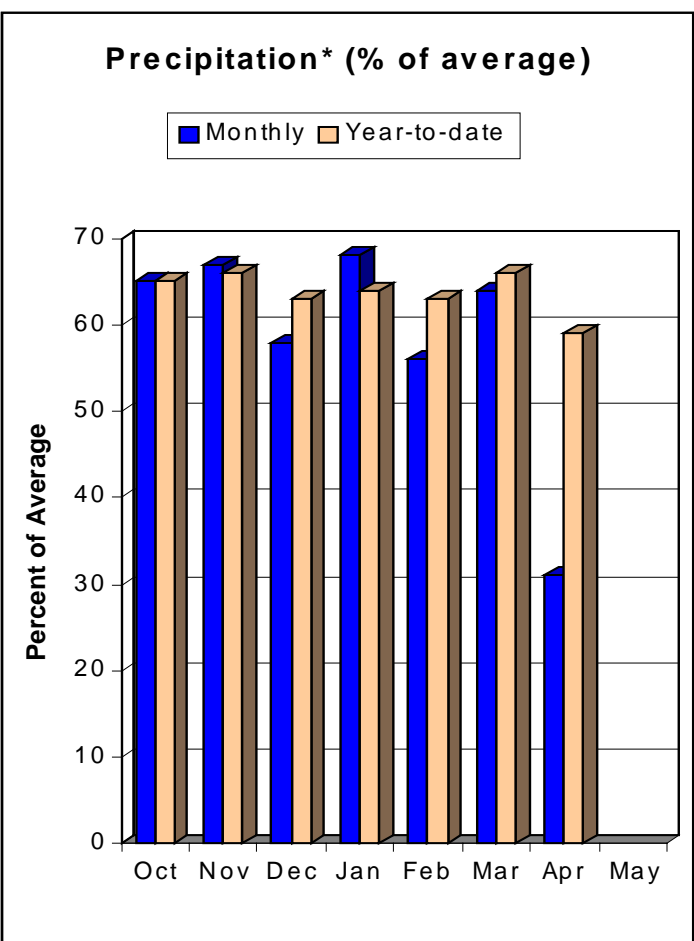


# SOUTH PLATTE RIVER BASIN

## as of May 1, 2002



\*Based on selected stations



More warm temperatures and low snowfall amounts during April, have contributed to the snowpack being reduced to the lowest level since 1981 in the South Platte Basin. Many of the snow measuring locations have already melted out, and what remains will probably not stick around much longer without a complete turn around in the weather patterns. The snowpack measurements range from only 3% of average in the St. Vrain Watershed, to 42% of average in the Cache La Poudre Watershed. The precipitation during April was only 31% of average, which was the lowest monthly accumulation this water year. The water year total is now only 59% of average. The combined reservoir storage is about 81% of average on May 1, and is likely to diminish further during the runoff season. There is about 5% less storage then there was last year at this time. With the runoff season well underway, it appears that the flow volumes will be even less than forecasted last month. Forecasts now range from only 15% of average at the Inflow to Antero Reservoir, to 54% of average at the Big Thompson River at mouth near Drake.

SOUTH PLATTE RIVER BASIN  
Streamflow Forecasts - May 1, 2002

		<<----- Drier ----- Future Conditions ----- Wetter ----->							
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)		
		=====		=====		=====			
Antero Reservoir inflow	APR-JUL	0.8	1.2	2.0	15	2.6	2.9	13.0	
Spinney Mountain Reservoir inflow	APR-JUL	8.0	10.5	12.7	32	15.3	20	40	
Elevenmile Canyon Reservoir inflow	APR-JUL	6.2	9.4	12.7	31	15.2	22	41	
Cheesman Lake inflow	APR-JUL	16.0	19.6	24	27	26	32	89	
South Platte River at South Platte	APR-SEP	62	74	88	38	122	163	230	
Bear Creek at Morrison	APR-SEP	7.1	8.4	9.5	31	10.9	12.7	31	
Clear Creek at Golden	APR-SEP	36	49	57	43	81	95	134	
St. Vrain Creek at Lyons	APR-SEP	34	38	43	51	55	66	84	
Boulder Creek nr Orodell	APR-SEP	17.3	19.9	24	45	33	38	53	
South Boulder Creek nr Eldorado Spri	APR-SEP	7.8	13.6	17.6	38	30	40	46	
Big Thompson River at mouth nr Drake	APR-SEP	36	52	63	54	88	101	117	
Cache La Poudre at Canyon Mouth	APR-SEP	60	94	117	43	178	233	275	

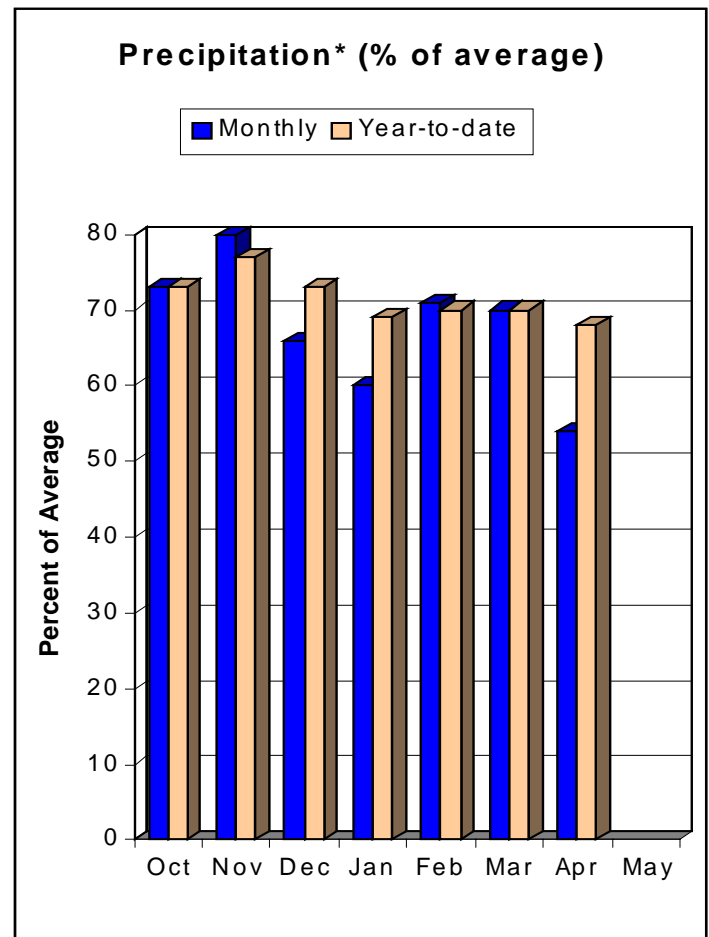
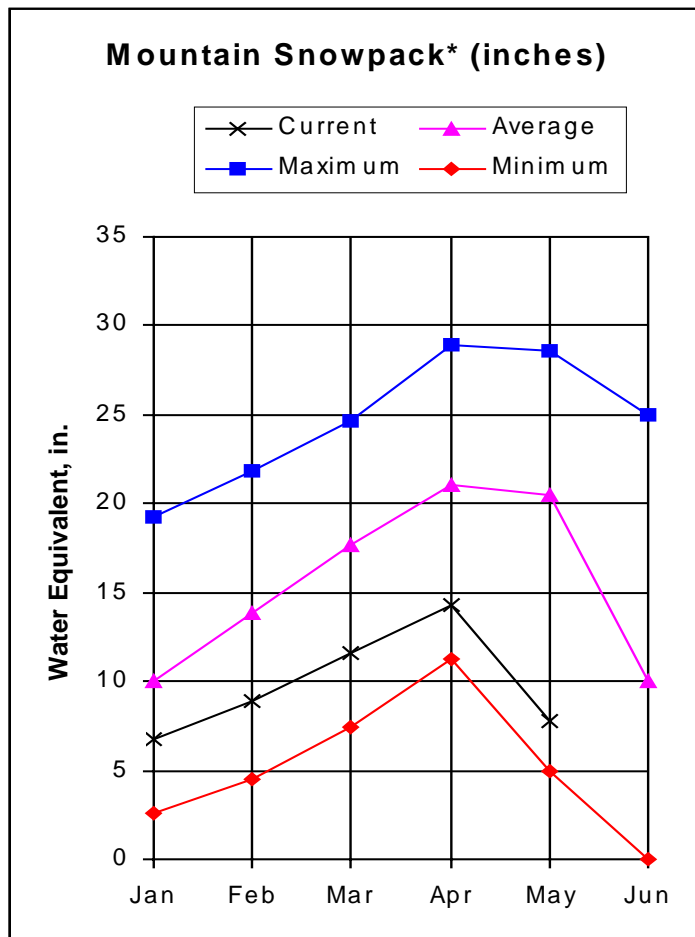
SOUTH PLATTE RIVER BASIN					SOUTH PLATTE RIVER BASIN			
Reservoir Storage (1000 AF) - End of April					Watershed Snowpack Analysis - May 1, 2002			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ANTERO	20.0	19.6	20.0	15.7	BIG THOMPSON BASIN	6	44	31
BARR LAKE	32.0	26.7	29.2	28.6	BOULDER CREEK BASIN	5	19	13
BLACK HOLLOW	8.0	2.7	2.4	4.2	CACHE LA POUDRE BASIN	7	56	42
BOYD LAKE	49.0	20.3	22.3	35.2	CLEAR CREEK BASIN	4	30	25
CACHE LA POUDRE	10.0	4.4	8.4	8.9	SAINT VRAIN BASIN	3	8	3
CARTER	108.9	102.8	102.2	103.0	UPPER SOUTH PLATTE BASIN	16	13	12
CHAMBERS LAKE	9.0	4.1	3.5	3.6	TOTAL SOUTH PLATTE BASIN	39	31	23
CHEESMAN	79.0	58.1	59.2	64.8				
COBB LAKE	34.0	6.8	9.0	14.2				
ELEVEN MILE	97.8	99.7	100.1	96.4				
EMPIRE	38.0	29.7	34.2	33.0				
FOSSIL CREEK	12.0	10.0	9.9	8.1				
GROSS	41.8	15.2	14.9	20.9				
HALLIGAN	6.4	5.3	3.0	4.8				
HORSECREEK	16.0	14.8	14.8	14.5				
HORSETOOTH	149.7	38.0	38.5	123.0				
JACKSON	35.0	25.2	26.0	30.4				
JULESBURG	28.0	16.8	18.4	21.3				
LAKE LOVELAND	14.0	9.7	11.6	10.1				
LONE TREE	9.0	8.5	8.8	7.9				
MARIANO	6.0	3.3	5.3	5.0				
MARSHALL		NO REPORT						
MARSTON	13.0	7.8	10.9	14.5				
MILTON	24.0	21.2	21.0	19.2				
POINT OF ROCKS	70.0	66.3	70.6	69.8				
PREWITT	33.0	22.1	24.6	25.9				
RIVERSIDE	63.1	48.6	56.0	57.9				
SPINNEY MOUNTAIN	48.7	25.1	20.9	32.1				
STANDLEY	42.0	28.0	31.2	35.3				
TERRY LAKE	8.0	5.1	5.6	5.7				
UNION	13.0	9.5	11.7	11.7				
WINDSOR	19.0	7.6	11.0	13.6				

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.

## YAMPA, WHITE, NORTH PLATTE AND LARAMIE RIVER BASINS as of May 1, 2002



\*Based on selected stations

Even though the snowpack measurements in these basins are the lowest since 1981, they have the highest percent of average in the state on May 1. The North Platte Basin is only 44% of average, while the Yampa and White basins combined are only at 32% of average. There is about 54% of the amount of snow in these basins that there was last year at this time. Snow accumulation ranges from only 32% of average in the Yampa Watershed, to 44% of average in the North Platte Watershed. Precipitation in these basins during April was only 54% of average, which was the lowest monthly accumulation this water year. The water year total is now only 68% of average. The combined storage in the two major reservoirs in these basins is at 98% of average volume for this time of year, which is about 6% less storage volume that there was last year at this time. Due to the exceptionally dry and warm month of April the streamflow forecasts in these basins have been reduced significantly from last month. Forecasts range from only 27% of average on the Laramie River near Woods, to 47% of average on the Little Snake River near Slater.

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Streamflow Forecasts - May 1, 2002

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
North Platte River nr Northgate	MAY-SEP	45	57	65	28	96	130	230
Laramie River nr Woods	MAY-SEP	22	29	34	27	52	79	127
Yampa R abv Stagecoach Res	APR-JUL	7.6	10.7	12.8	44	17.5	24	29
Yampa River at Steamboat Springs	APR-JUL	88	110	125	45	140	162	280
Elk River nr Milner	APR-JUL	86	113	134	41	157	193	325
Elkhead Creek nr Elkhead	APR-JUL	8.0	9.9	11.5	30	13.3	16.6	39
ELKHEAD CREEK blw Maynard Gulch	APR-JUL	14.3	17.7	20	34	27	37	59
Fortification Ck nr Fortification	MAR-JUN	1.22	1.74	2.10	28	3.38	5.25	7.50
Yampa River nr Maybell	APR-JUL	269	308	335	34	414	530	990
Little Snake River nr Slater	APR-JUL	45	61	74	47	88	111	159
LITTLE SNAKE R nr Dixon	APR-JUL	36	99	142	43	185	248	330
LITTLE SNAKE R nr Lily	APR-JUL	44	109	154	42	199	264	365
White River nr Meeker	APR-JUL	86	102	114	39	128	152	290

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Reservoir Storage (1000 AF) - End of April

YAMPA, WHITE, AND NORTH PLATTE RIVER BASINS  
Watershed Snowpack Analysis - May 1, 2002

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
STAGECOACH	33.3	28.2	29.6	28.1	LARAMIE RIVER BASIN	4	52	38
YAMCOLO	9.1	6.7	7.5	7.4	NORTH PLATTE RIVER BASIN	5	60	44
					TOTAL NORTH PLATTE BASIN	8	59	44
					ELK RIVER BASIN	2	56	34
					YAMPA RIVER BASIN	11	51	32
					WHITE RIVER BASIN	4	45	37
					TOTAL YAMPA AND WHITE RIV	14	49	32
					LITTLE SNAKE RIVER BASIN	8	70	50

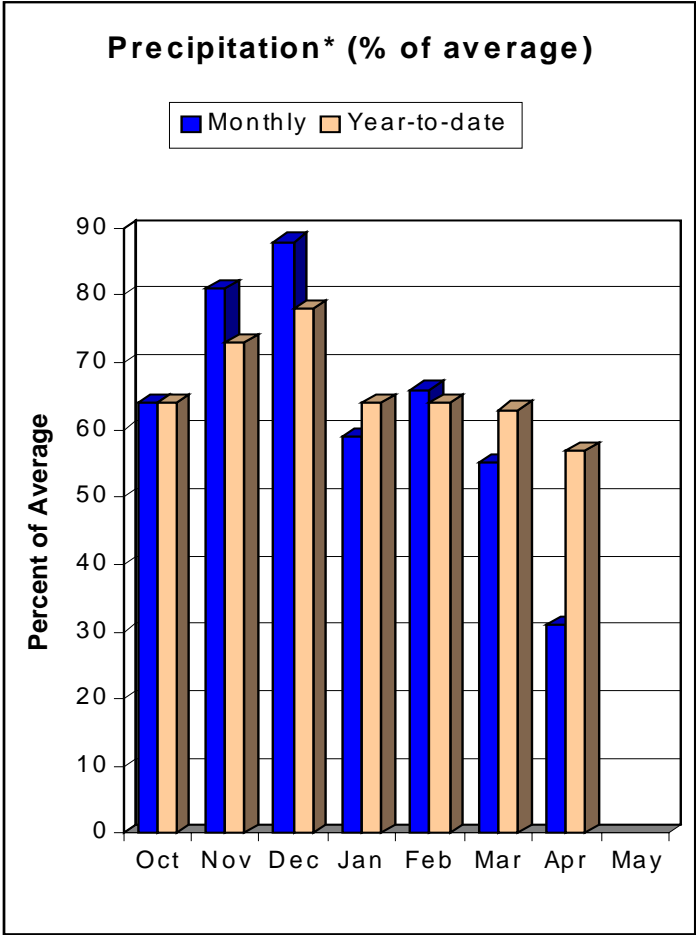
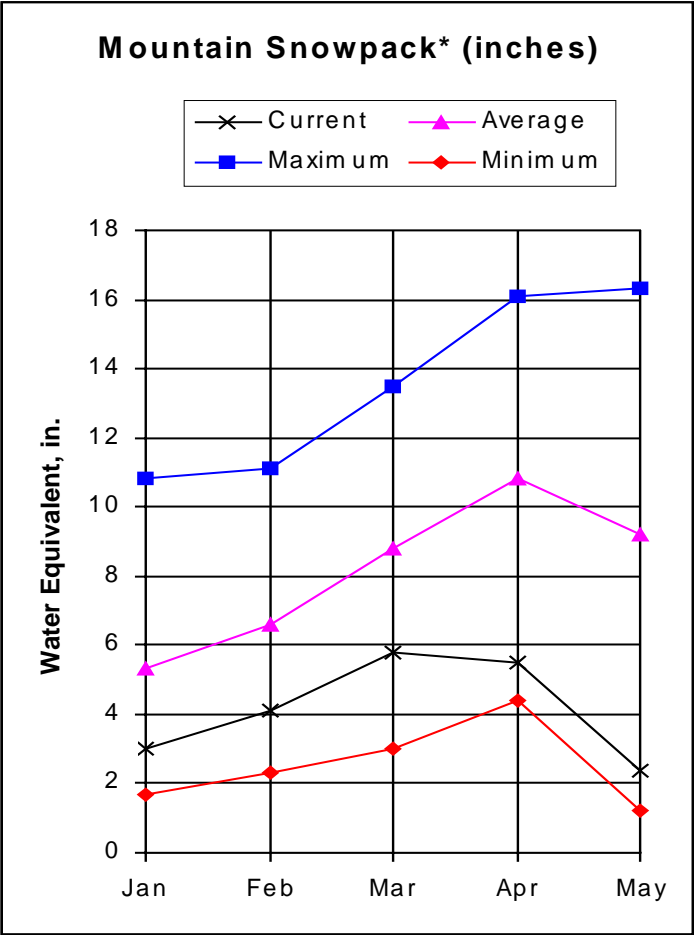
\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
(2) - The value is natural volume - actual volume may be affected by upstream water management.

# ARKANSAS RIVER BASIN

## as of May 1, 2002



\*Based on selected stations

Extremely warm and dry conditions in the Arkansas Basin, have driven the May 1 snowpack measurements to their lowest levels since 1977. Measurements are only 24% of average, which is only 30% of the amount there was last year at this time. Only 3 out of the 8 measuring locations have measurable snow remaining at them. The measurements range from no measurable snow in the Purgatoire River Watershed, to 34% of average in the Upper Arkansas Watershed. The precipitation during April was only 31% of average, which was the lowest accumulation so far this water year. The water year total is now only 57% of average. The combined reservoir storage is at 76% of average, which is slightly less than last month, and can be expected to fall much more as the runoff season progresses. There is 38% less water stored then there was last year at this time. As a result of the unusually dry, warm conditions during April, the streamflow forecasts have been lowered significantly from last month's. They range from only 24% of average on Grape Creek near Westcliffe, to 44% of average on the Arkansas River at Salida.

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ARKANSAS RIVER BASIN  
Streamflow Forecasts - May 1, 2002

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Forecast Point	Forecast Period	<<----- Drier ----- Future Conditions ----- Wetter ----->						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
=====								
Chalk Creek nr Nathrop	APR-SEP	5.6	7.9	9.5	35	14.0	21	27
Arkansas River at Salida	APR-SEP	95	119	136	44	169	215	310
Grape Creek nr Westcliffe	APR-SEP	2.2	2.5	4.6	24	7.6	13.3	19.6
Pueblo Reservoir Inflow	APR-SEP	119	143	159	37	205	272	430
Huerfano River nr Redwing	APR-SEP	3.6	4.5	5.1	33	6.9	9.7	15.5
Cucharas River nr La Veta	APR-SEP	2.4	3.4	4.0	31	6.1	9.1	13.0
Trinidad Lake Inflow	APR-SEP	9.5	13.8	16.7	38	24	36	44

ARKANSAS RIVER BASIN Reservoir Storage (1000 AF) - End of April					ARKANSAS RIVER BASIN Watershed Snowpack Analysis - May 1, 2002			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ADOBE	70.0	27.1	64.0	34.3	UPPER ARKANSAS BASIN	3	37	34
CLEAR CREEK	11.0	6.4	6.1	6.0	CUCHARAS & HUERFANO RIVER	4	23	15
GREAT PLAINS	150.0	21.8	64.8	40.6	PURGATOIRE RIVER BASIN	2	0	0
HOLBROOK	7.0	5.8	3.9	4.7	TOTAL ARKANSAS RIVER BASIN	8	30	24
HORSE CREEK	28.0	0.0	0.2	11.3				
JOHN MARTIN	335.7	78.7	169.4	123.7				
LAKE HENRY	8.0	5.9	6.9	6.0				
MEREDITH	42.0	18.5	25.2	20.1				
PUEBLO	236.7	135.9	199.2	163.5				
TRINIDAD	72.3	18.1	35.1	29.1				
TURQUOISE	126.6	57.0	55.4	70.8				
TWIN LAKES	86.0	44.4	43.9	41.3				

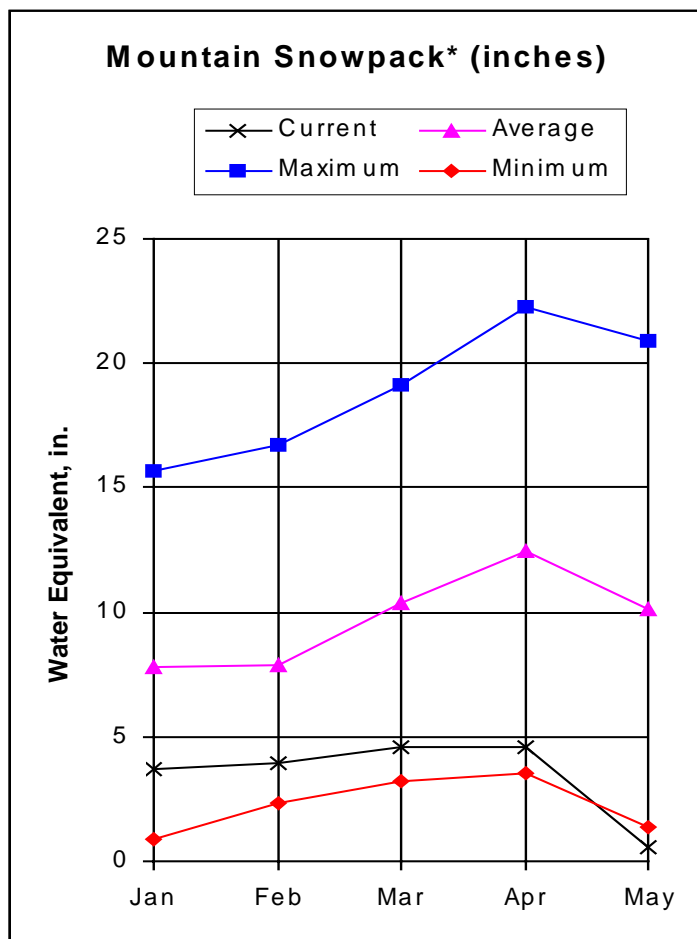
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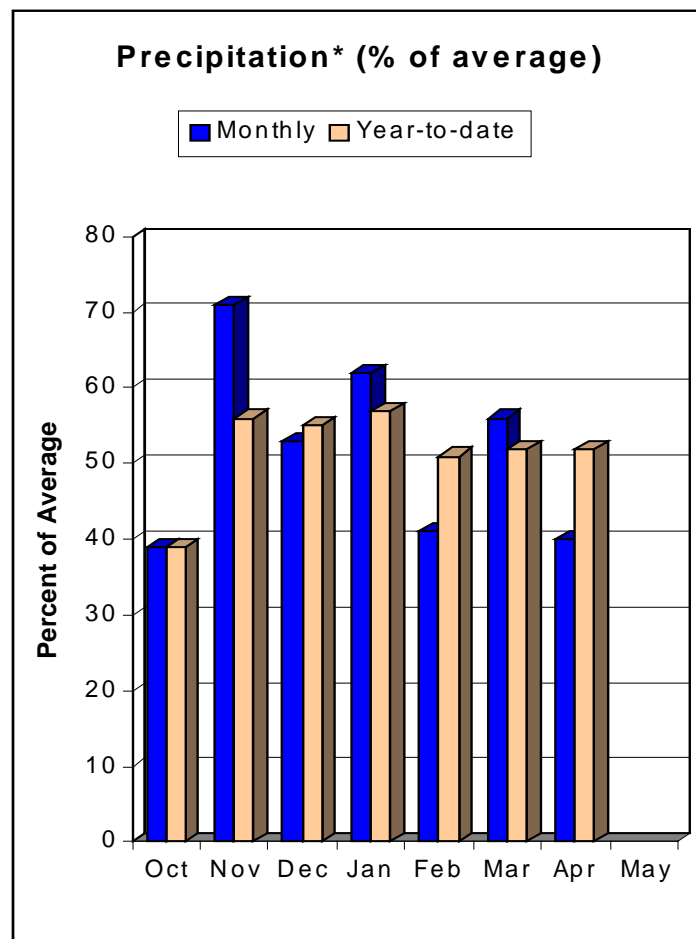
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## UPPER RIO GRANDE BASIN as of May 1, 2002



\*Based on selected stations



The snowpack measurements in the Rio Grande Basin are lower than they have ever been previously on May 1, and any hope of recovery will probably have to focus on the next snow season. Extremely dry, warm conditions have melted away most of what small accumulation existed and has only left enough snow to measure at 5 out of 22 measuring locations. Measurements range from no measurable snow in some watersheds, to 10% of average in the Upper Rio Grande Watershed. The precipitation during April was only 40% of the average monthly amount. The water year total is now only 48% of average. Reservoirs in the basin have a storage level of only 71% of average on May 1. There is about 20% less storage than there was last year at this time. The unrelenting dry, warm conditions that have persisted for most of the water year have been devastating to the streamflow forecasts, as they have continually been bumped lower with each month. Now the forecasts range from only 7% of average flow on the San Antonio River at Ortiz, to 33% of average at the Inflow to Rio Grande Reservoir.

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UPPER RIO GRANDE BASIN  
Streamflow Forecasts - May 1, 2002

=====

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		=====		Chance Of Exceeding *		=====		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
=====								
Rio Grande at Thirty Mile Bridge	APR-SEP	41	43	45	33	47	50	136
Rio Grande Reservoir Inflow	APR-JUL	35	37	39	33	41	44	118
Rio Grande at Wagon Wheel Gap	APR-SEP	92	100	105	30	120	143	345
South Fork Rio Grande at South Fork	APR-SEP	23	25	26	20	32	42	132
Rio Grande nr Del Norte	APR-SEP	121	129	135	25	157	190	531
Saguache Creek nr Saguache	APR-SEP	5.6	7.4	8.6	26	13.2	20	33
Alamosa Creek abv Terrace Reservoir	APR-SEP	14.2	16.2	17.5	25	23	31	70
La Jara Creek nr Capulin	MAR-JUL	0.72	1.07	1.30	15	2.86	5.17	8.70
Trinchera Water Supply	APR-SEP	7.8	9.5	10.6	27	15.9	24	40
Platoro Reservoir Inflow	APR-JUL	15.4	17.0	18.0	28	22	27	64
	APR-SEP	17.9	19.8	21	30	25	31	71
Conejos River nr Mogote	APR-SEP	41	46	49	25	62	82	200
San Antonio River at Ortiz	APR-SEP	0.7	1.0	1.2	7	1.8	3.0	16.4
Los Pinos River nr Ortiz	APR-SEP	9.3	10.3	11.0	15	15.6	22	74
Culebra Creek at San Luis	APR-SEP	4.2	5.9	7.1	31	10.9	16.5	23
Costilla Reservoir inflow	MAR-JUL	1.8	2.2	2.5	24	3.5	4.9	10.6
Costilla Creek nr Costilla	MAR-JUL	4.1	4.9	5.5	21	7.9	11.4	26

UPPER RIO GRANDE BASIN Reservoir Storage (1000 AF) - End of April					UPPER RIO GRANDE BASIN Watershed Snowpack Analysis - May 1, 2002			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of Last Yr      Average	
		This Year	Last Year	Avg				
CONTINENTAL	15.0	4.2	8.0	6.6	ALAMOSA CREEK BASIN	2	0	0
PLATORO	53.7	13.8	14.4	23.3	CONEJOS & RIO SAN ANTONIO	4	2	2
RIO GRANDE	51.0	13.7	18.4	21.4	CULEBRA & TRINCHERA CREEK	4	0	0
SANCHEZ	103.0	24.3	28.1	25.8	UPPER RIO GRANDE BASIN	11	7	10
SANTA MARIA	45.0	7.9	9.4	11.1	TOTAL UPPER RIO GRANDE BA	22	5	6
TERRACE	13.1	4.7	7.4	7.8				

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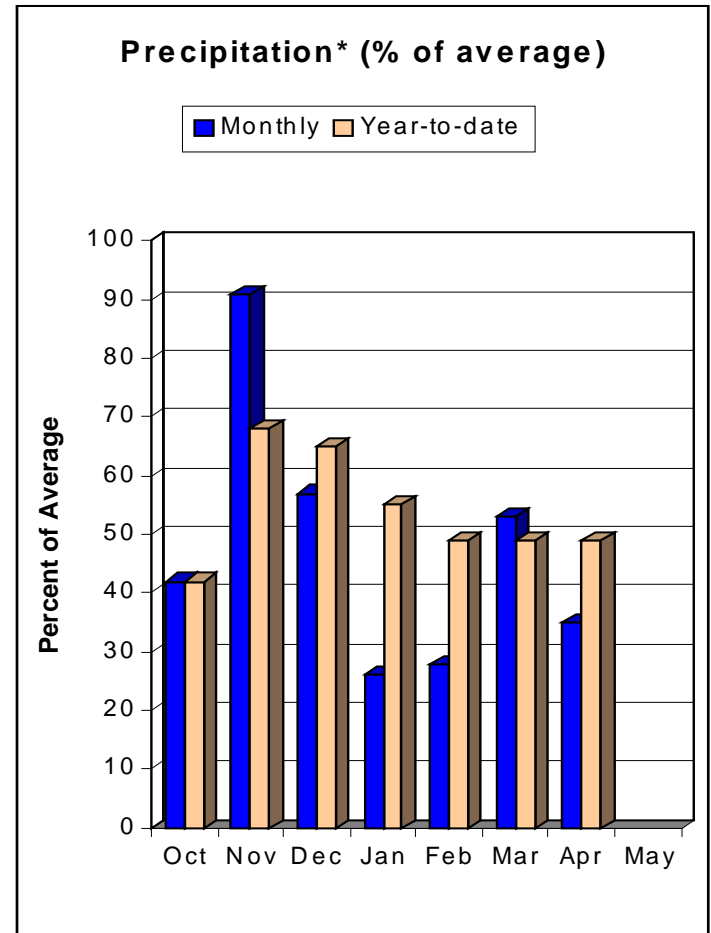
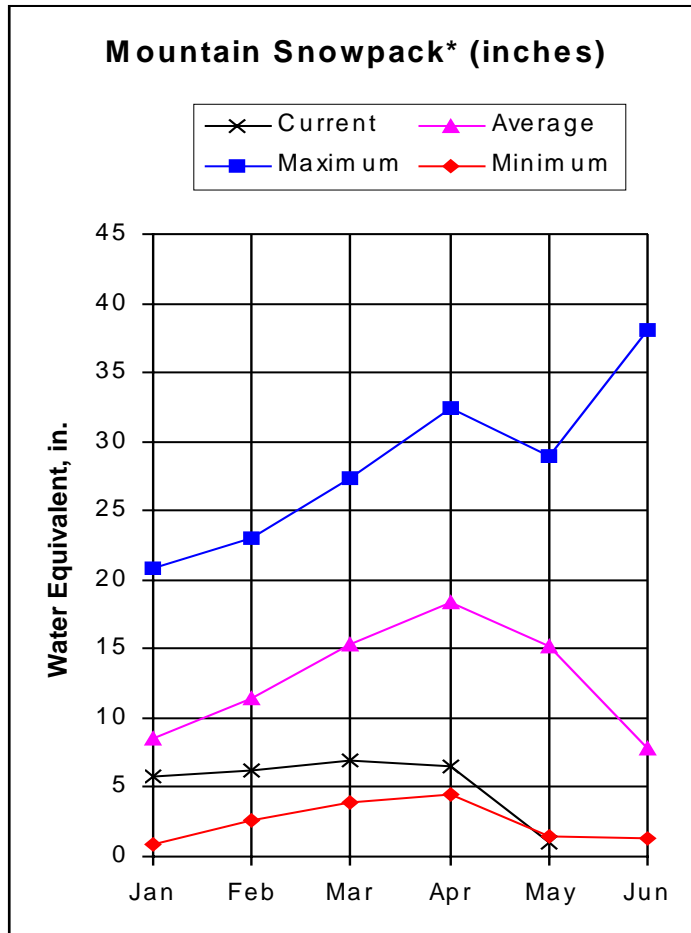
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## SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS as of May 1, 2002



\*Based on selected stations

April's warm, dry conditions delivered what could be considered the knockout blow to these basin's water supply outlook. Only 5 out of 22 measuring locations have measurable snow remaining at them. Combined, the basin's snowpack measurements are only 6% of average on May 1, which is only 7% of last year's snowpack amount. Measurements range from no measurable snow in the San Miguel River Basin, to 13% of average in the San Juan River Basin. Precipitation during April was only 35% of the average for the month. The water year total is only 49% of average. Unfortunately there may not be much relief to the water supplies from reservoirs in the basins, as they only have a combined storage level of 72% of average, and are likely to decrease further through the runoff season. Shockingly, the majority of this season's runoff has already passed and many of the streams may be down to or below their base flow levels before the high water use season begins. Forecasts for flow through July range from only 14% of average on the La Plata River at Hesperus, to 44% of average at the Inlet to Cone Reservoir.

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS  
Streamflow Forecasts - May 1, 2002

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
=====								
Dolores River at Dolores	APR-JUL	39	47	53	20	75	106	265
McPhee Reservoir inflow	APR-JUL	48	55	60	19	85	122	320
San Miguel River nr Placerville	APR-JUL	23	28	32	24	45	64	132
Gurley Reservoir Inlet	MAY-JUL	3.6	4.5	5.1	35	6.8	9.2	14.8
	MAY			4.40	50			8.83
	JUNE			0.60	13			4.67
	JULY			0.10	8			1.32
Cone Reservoir Inlet	MAY-JUL	1.10	1.25	1.35	44	1.58	1.92	3.06
	MAY			1.05	64			1.64
	JUNE			0.25	24			1.04
	JULY			0.05	13			0.38
Lilylands Reservoir Inlet	MAY-JUL	0.68	0.92	1.08	44	1.45	2.00	2.45
	MAY			0.80	61			1.32
	JUNE			0.24	28			0.87
	JULY			0.04	15			0.27
Rio Blanco at Blanco Diversion	APR-JUL	6.1	8.4	10.0	19	15.4	23	53
Navajo River at Oso Diversion	APR-JUL	8.7	11.6	13.6	20	21	31	69
San Juan River nr Carracus	APR-JUL	37	63	84	21	108	150	405
Piedra River nr Arboles	APR-JUL	25	41	46	20	57	74	230
Vallecito Reservoir Inflow	APR-JUL	42	45	46	22	53	62	205
Navajo Reservoir Inflow	APR-JUL	93	107	116	15	182	280	800
Animas River at Durango	APR-JUL	78	91	100	23	138	194	440
Lemon Reservoir Inflow	APR-JUL	13.3	15.2	16.4	28	21	27	58
La Plata River at Hesperus	APR-JUL	3.1	3.4	3.6	14	5.1	7.2	25
Mancos River nr Mancos	APR-JUL	4.1	5.5	6.4	16	12.2	21	40
	MAY			5.0	31			15.9
	JUNE			1.1	8			13.7
	JULY			0.30	7			4.60

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS  
Reservoir Storage (1000 AF) - End of April

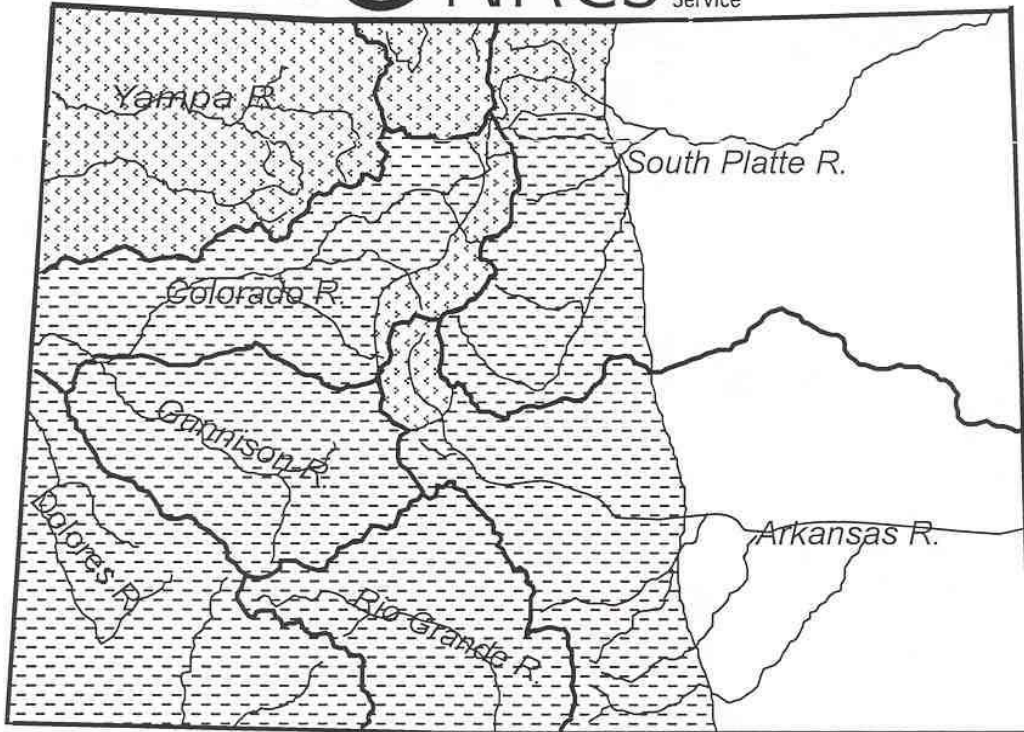
SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS  
Watershed Snowpack Analysis - May 1, 2002

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
GROUNDHOG	21.7	11.2	11.3	14.2	ANIMAS RIVER BASIN	9	6	6
JACKSON GULCH	10.0	3.3	4.6	7.4	DOLORES RIVER BASIN	7	4	3
LEMON	40.0	4.6	14.9	23.4	SAN MIGUEL RIVER BASIN	5	0	0
MCPHEE	381.2	214.9	252.9	304.6	SAN JUAN RIVER BASIN	3	12	13
NARRAGUINNEP	19.0	17.1	16.8	17.1	TOTAL SAN MIGUEL, DOLORES	23	7	6
VALLECITO	126.0	64.0	45.4	70.3	AN JUAN RIVER BASINS			

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

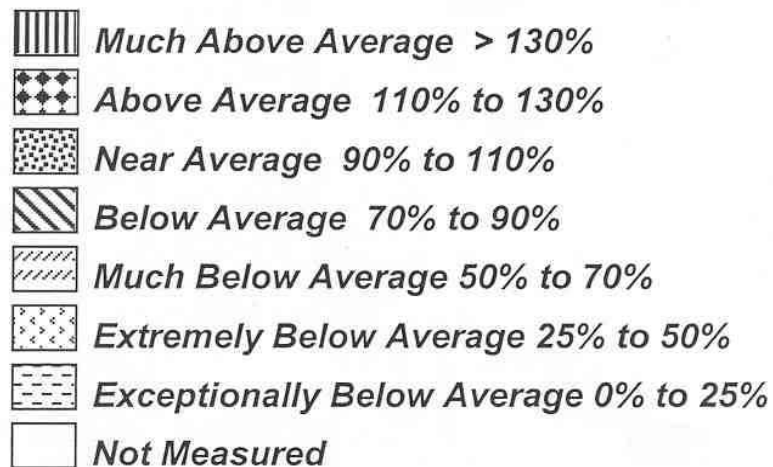
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## **Snowpack May 1, 2002**

**Statewide: 19% of Average  
24% of Last Year**



655 Parfet Street, Room E200C  
Lakewood, CO 80215-5517



In addition to the basin outlook reports, water supply forecast information for the Western United States is available from the Natural Resources Conservation Service and the National Weather Service monthly, January through May. The information may be obtained from the National Resources Conservation Service web page at <http://www.wcc.nrcs.usda.gov/water/quantity/westwide.html>

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*Issued by*

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*Released by*

**Allen Green**  
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**Natural Resources Conservation Service**  
**Lakewood, Colorado**

# **Colorado**

## **Basin Outlook Report**

**Natural Resources Conservation Service**  
**Lakewood, CO**